APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/922,854	08/07/2001	Jyh-Jiun Lee	3313-0371P-SP	8543

2292	7590	07/15/2004

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EXAMINER
HUNG, YUBIN

ART UNIT	PAPER NUMBER
2625	3

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☐ This action is non-final.

3)☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-20* is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

1.   Claims 1-20 are allowed.

2.   The following is a statement of reasons for the indication of allowable subject

matter.

3.   Regarding claim 1, prior art of record, alone or in combination, fails to disclose or

teach a method for deciding a semi-S curve for processing tone scale comprising,

among other things, the steps of

- c) deciding a shadow portion color enhancement curve O-TP of the semi-S curve locating 15 before the transition point TP, the curve O-TP passing through origin point O(0, 0) of the histogram, the transition point TP and a maximum downward offset point determined by a maximum downward offset D, calculated as follows:
    $D, = C_1 (2PF_1-1)$ when $2PF_1-1<0$, and
    $D, =0$ when $2PF_1-1>=0$
    in which $F_1 = \Sigma F_n$ $(n=0-(N/2))$, C_1 is a predetermined constant; and
- d) deciding a light portion color enhancement curve TP-E of the semi-S curve locating after the transition point TP, the Curve TP-E passing through an end point, the transition point TP and a maximum downward offset point determined by a maximum upward offset D, calculated as follows:
    $D_2=C_2 [(1-2PF_2)/(P-1)]$ when $(1-2PF_2)/(P-1) >= 0$ and
    $D_2=0$ when $(1-2PF_2)/(P-1) < 0$
    in which $F_2= \Sigma F_n$ $(n=(N+Mg)/2 - Mg)$, C_2 is a predetermined constant: whereby, the semi-S curve composed of the curve O-TP and the curve TP-E is obtained

In the closet arts of record, Neonen et al. (US PUB. No. 2001/0046320 A1) discloses a

method that uses histogram-based techniques to generate non-linear mapping functions

(curves) for contrast enhancement [Figs. 1, 2, 6; P. 2, paragraphs 0029, 0035];

Bamberger et al. (US 5,854,851) discloses using S-curves for gray scale stretching

[Figs. 3B-3D; Col. 7, lines 54-61; claim 6]; Gonzalez et al. (Digital Image Processing, 1st

ed., 1993) discloses obtaining the position of a transition point at tone scale $N = r_k$ (with

respect to a predetermined parameter $P = 1/s_k$) [P. 178, lines 7-12]. However, none of

the arts disclose or suggest the limitations c) and d) above.

Conclusion

4.   This application is in condition for allowance except for the following formal

matters:

5.   Specification

- P. 8, lines 6-16: Change all instances of F_1 to, say, q_1 to avoid confusion since

  F_1 here means both the probability at tone scale 0 as well as the cumulative

  probability of ΣF_n, (n=0 -- (N/2)); also make similar change to all instances of F_2

  in P. 8, lines 21-28

6.   Claim 1, lines 14-15: delete "of the histogram" since the semi-S curve is not

defined on a histogram

7.   Claim 1, lines 18-27: change F_1 and F_2 as per paragraph 5 above (for the same reason)

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8.   Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (703) 305-1896. The examiner can normally be reached on 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Yubin Hung
Patent Examiner
July 2, 2004

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